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Rediscovery of three narrow endemic and threatened members of Rubiaceae from Tamil Nadu, India

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Abstract

Three narrow endemic and threatened taxa of Rubiaceae namely, *Pavetta oblanceolata* Bremek., *Knoxia sumatrensis* (Retz.) DC. var. *linearis* (Gamble) Bhattacharjee & Deb, and *Psychotria globicephala* Gamble are rediscovered after the type collection. Detailed descriptions, illustrations and relevant notes of the taxa are provided.

INTRODUCTION

The authors, while preparing a botanical inventory of the Kalakkad-Mundanthurai Tiger Reserve (KMTR), Tamil Nadu, India rediscovered three narrow endemic and threatened taxa of Rubiaceae namely, *Pavetta oblanceolata* Bremek., *Knoxia sumatrensis* (Retz.) DC. var. *linearis* (Gamble) Bhattacharjee *et* Deb, and *Psychotria globicephala* Gamble. Detailed descriptions and illustrations are provided for their easy identification.

Pavetta oblanceolata Bremek., Feddes Repert. 37: 91. 1934; Fischer in Gamble, Fl. Pres. Madras 1878. 1936 (3: 1300. 1957, repr. ed.); Nayar & Sastry, Red Data Book Indian Pl. 3: 227. 1990 (Fig. 1).

Shrubs, up to 2 m high; stems branched, stout, obtusely angled, bark corky; flowering branches green. Leaves opposite, decussate, oblanceolate, 7-15 x 2.6-4.5 cm, membranous, punctate, attenuate at base, margin entire, apex abruptly acuminate or caudate, glabrous; midrib canaliculate above, raised beneath; lateral nerves 8-11 pairs, alternate or subopposite, raised on both sides; petioles upto 3 cm long, canaliculate above, rounded beneath, often lenticellate; stipules interpetiolar, c. 4.5 x 5 mm, lanceolate, ciliate at margin, sheath-like, connate, deciduous, straw-coloured, subacuminate at apex. Inflorescence, corymbose cymes, 30-36-flowered, 6.5-7 x 8-11 cm; peduncles flattened, green; primary ones up to 10 x 1.5 mm; secondary ones up to 7 x 1.3 mm; pedicels glabrous, up to 6 mm long; bracts deltoid, c. 1.2 x 1.2 mm, fimbriate at margin, cuspidate at apex, deciduous. Calyx tube obovate, c. 1.2 x 2 mm,

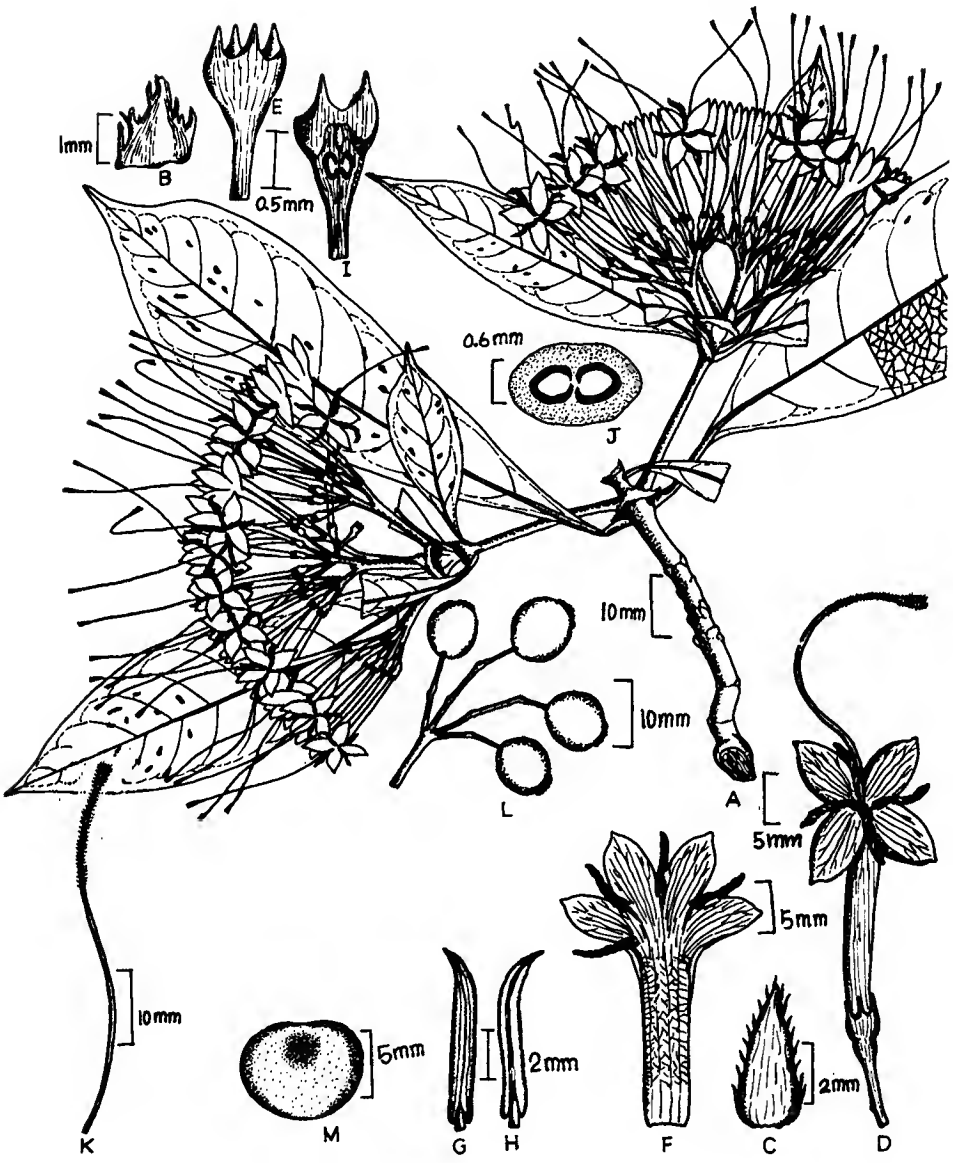

Fig. 1. *Pavetta oblanceolata* Bremek.: A. Flowering twig; B. Stipule; C. Bract; D. Flower, E. Calyx; F. Corolla – split open; G. Anther – dorsal view; H. Anther – ventral view; I. L.S. of ovary; J. T.S. of ovary, K. Style and stigma; L. Fruits; M. Seed.

glabrous, 4-toothed; teeth narrowly triangular, c. 1 x 1.2 mm, keeled, hyaline at margin, subulate at apex, glabrous. Corolla white; tube 20-22 x 1.75-3 mm, sparsely pilose inside, glabrous outside; lobes 4, elliptic, 8-10 x 4-5 mm, entire at margin, mucronulate at apex, 4-6-nerved. Stamens 4, inserted at the throat of corolla; filaments glabrous, c. 2 x 0.4 mm; anthers white, linear, c. 7 x 1 mm, dorsifixed, sagittate at base, acute at apex, dehiscing longitudinally. Ovary 2-loculed, 1 ovule in each locule; disk c. 1 x 1 mm, annular; style terete, glabrous to puberulous above the middle; stigma bifid, lobes linear, c. 1 x 0.4 mm. Berries green, subglobose, 2-pyrened, glabrous, c. 10 x 9 mm; seeds 2, c. 8 x 6.5 mm, subglobose.

Flowering and fruiting: February – April.

Distribution: Tirunelveli District of Tamil Nadu state and Thiruvananthapuram, Palakkad Districts of Kerala state in India.

Specimens examined: India, Tamil Nadu, Tirunelveli Dist.: Kalakkad-Mundanthurai Tiger Reserve, Vaniangalpodavu, ± 1150 m, 23 March 2000, *Viswanathan & Manikandan 5779* (SPKCES).

Notes: Nayar and Sastry (1990) (l.c.) assigned indeterminate or possibly extinct status to this species due to the absence of further collection since 1847. The present collection of the species after 164 years of its first collection, and for the first time from Tamil Nadu is a record of its extended distribution.

Knoxia sumatrensis (Retz.) DC. var. **linearis** (Gamble) Bhattacharjee & Deb, J. Econ. Tax. Bot. 6: 93. 1985.

K. linearis Gamble, Kew Bull. 1920: 68. 1920 & Fl. Pres. Madras 622. 1921 (2: 439. 1957, repr. ed.); Henry *et al.*, J. Bombay Nat. Hist. Soc. 75(3): 690. 1978; Vajravelu & Daniel in Jain & Sastry, Mat. Cat. Threat. Pl. India 23. 1983; Swamin. in Henry *et al.*, Fl. Tamil Nadu Ser. I, Anal. 2: 12. 1987 (Fig. 2).

Herbs, erect, perennial; rootstock woody; stems branched at basal nodes, many, striated, grooved, pilose at grooves. Leaves simple, 4.1-7.5 x 1.5-2.5 cm, elliptic or elliptic-lanceolate, obliquely attenuate or cuneate at base, margin entire, strigose or setaceous, apex acuminate or acuminate-caudate, strigose and scabrous on either side; midrib flattened, faint above, prominent beneath, strigose-pilose; lateral nerves 8-12 pairs, faint above, prominent beneath; petioles pilose, up to 5 mm long; stipules interpetiolar, ovate, pectinate, 3-8-toothed; teeth gland-tipped, pilose. Inflorescence a terminal cymose raceme, strigose; cymes slender, racemosely branched, up to 8 cm long, 6-8 cm across; primary peduncles 1.8-4 cm long; pedicels slender, up to 1.5 mm long. Flowers 4-merous. Calyx tube ovoid, c. 1.2 x 1.1 mm, glabrous; lobes ovate, subequal or 1 or 2 longer, larger ones 1.2 x 1.2 mm, persistent. Corolla pale pink; tube funnel-shaped or clavate, c. 4 x 1 mm, glabrous without, pilose within; lobes oblong-ovate, c. 1.8 x 1 mm, thick, fleshy, apex hooded or saccate, margins entire. Stamens 4, alternipetalous, adnate to corolla tube at base, free from just below the middle; filaments 3 mm

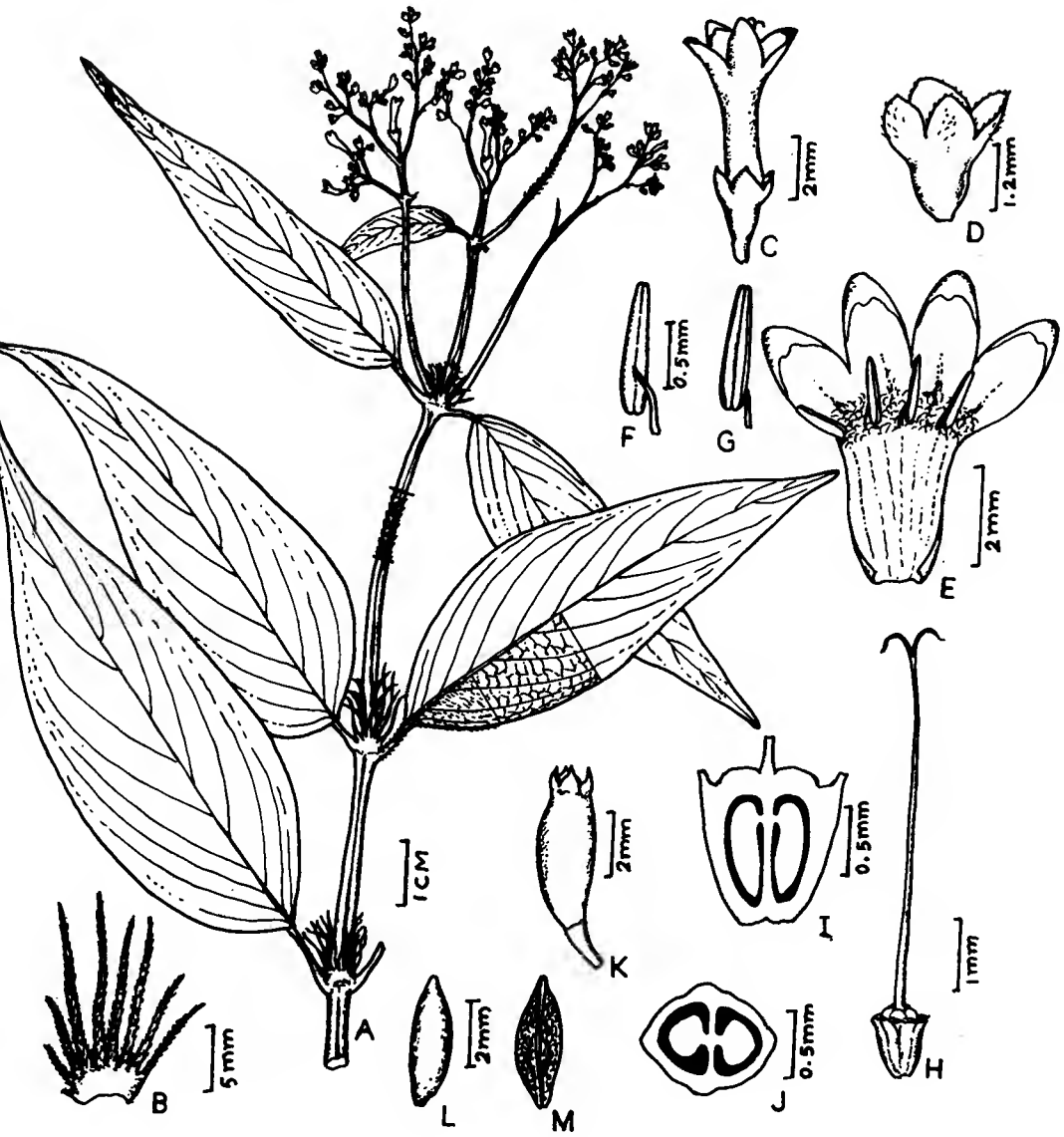

Fig. 2. *Knoxia sumatrensis* (Retz.) DC. var. *linearis* (Gamble) Bhattacharjee & Deb: A. Flowering twig; B. Stipule; C. Flower; D. Calyx; E. Corolla – split open; F. Anther – ventral view; G. Anther – dorsal view; H. Ovary, style and stigma; I. L.S. of ovary; J. T.S. of ovary; K. Fruit; L. Seed – dorsal view; M. Seed – ventral view.

long, exserted; anthers linear-oblong, c. 1 x 0.2 mm. Ovary inserted ovoid-obconical, c. 0.5 mm long, glabrous; style filiform, c. 2.5 mm long; stigmas 2, linear, c. 0.35 mm long, resinous and turgid at base. Fruits oblong-obovoid, c. 4 x 1 mm, glabrous, with persistent calyx, minutely puberulous; mericarps 2, sub-terete, indehiscent, separating from columella; columella 2-fid, persistent; seeds 2, oblong-obovoid, trigonous, c. 2.75 x 1.5 mm, flat at one side, convex on the other side, acute at both the ends, testa membranous.

Flowering and fruiting: April – May.

Distribution: Tirunelveli and Kanniyakumari Districts of Tamil Nadu in India.

Specimens examined: India, Tamil Nadu, Kanniyakumari Dist.: Mahendragiri Hills, 17 Sept. 1916, *Rangachari 13168* (Holotype, MH). Tirunelveli Dist.: Kalakkad–Mundanthurai Tiger Reserve (KMTR), Poongulam R.F., ± 1,200 m, 25 May 1998, *Viswanathan, Prem Kumar & Ramesh 2167*; Vellachipodavu, ± 1,175 m, 25 May 2000, *Viswanathan & Manikandan 6670*; 20 May 2001, ± 1,050 m, *Viswanathan & Manikandan 14323*; Thevarpodavu, ± 1,200 m, 13 March 2001, *Viswanathan & Manikandan 11060*; Way to Poongulam, ± 920 m, 20 May 2001, *Viswanathan & Manikandan 14310* (SPKCES).

Notes: Gamble (1920) described this species based on specimen (*Rangachari 13168*) collected by Rangachari in 1916 from Mahendragiri hills of Kanniyakumari District, Tamil Nadu, India. Henry *et al.* (1978) designated this species as one of the 224 species presumably in danger of extinction in South India and there is no collection after the type. This species is designated as threatened by Vajravelu and Daniel (1983) and as an endemic, rare and endangered by Swaminathan (1987). The present collection of this species from Tirunelveli District after 83 years of its first collection is a record of its extended distribution in Tamil Nadu.

Psychotria globicephala Gamble, Kew Bull. 1920: 249. 1920 & Fl. Pres. Madras 640. 1921 (2: 451. 1957, repr. ed.); Henry *et al.*, J. Bombay Nat. Hist. Soc. 75(3): 690. 1978; Henry, Kumari & Chithra, Fl. Tamil Nadu 2: 22. 1987; Nayar & Sastry, Red Data Book Indian Pl. 2: 233. 1988 (Fig. 3).

Shrubs, up to 1 m high. Leaves oblong-lanceolate or oblong-elliptic, 10-17.5 x 3-5.5 cm, membranous, glabrous above, puberulous beneath, olive green when dry, base attenuate, margin entire, apex acuminate, midrib channelled above; lateral nerves 12-18 pairs, subopposite, parallel, arcuate, without domatia; nervules reticulate beneath; petioles 1-2 cm long, glabrous; stipules interpetiolar, broadly ovate, 5-7 x 6-8.5 mm, ciliate at margin, acuminate at apex, ferrugineus villous beneath at base, deciduous. Inflorescence a terminal, peduncled, globose head, 1-2 cm across with ferrugineus hairs; peduncles 1-4 x 2-3.5 mm, ferrugineus tomentose. Flowers white, 14-25, sessile, 7-8.2 x 4.8-5.1 mm. Calyx cupular; tube c. 2.4 x 3.7 mm, glabrous; lobes 5, broadly ovate or obovate, c. 1.7 x 1.6 mm, ferrugineus tomentose, ciliate, obtuse at apex; hypanthium oblong, c. 0.5 mm long, glabrous. Corolla tube 3-5.2 x 2.8-3.5 mm, glabrous above, villous at throat inside; lobes 5, ovate, 1-2.1 x 1.4-2.5 mm, inflexed, glabrous. Stamens 5, exserted; filaments c. 1.1 mm long, adnate at throat; anthers

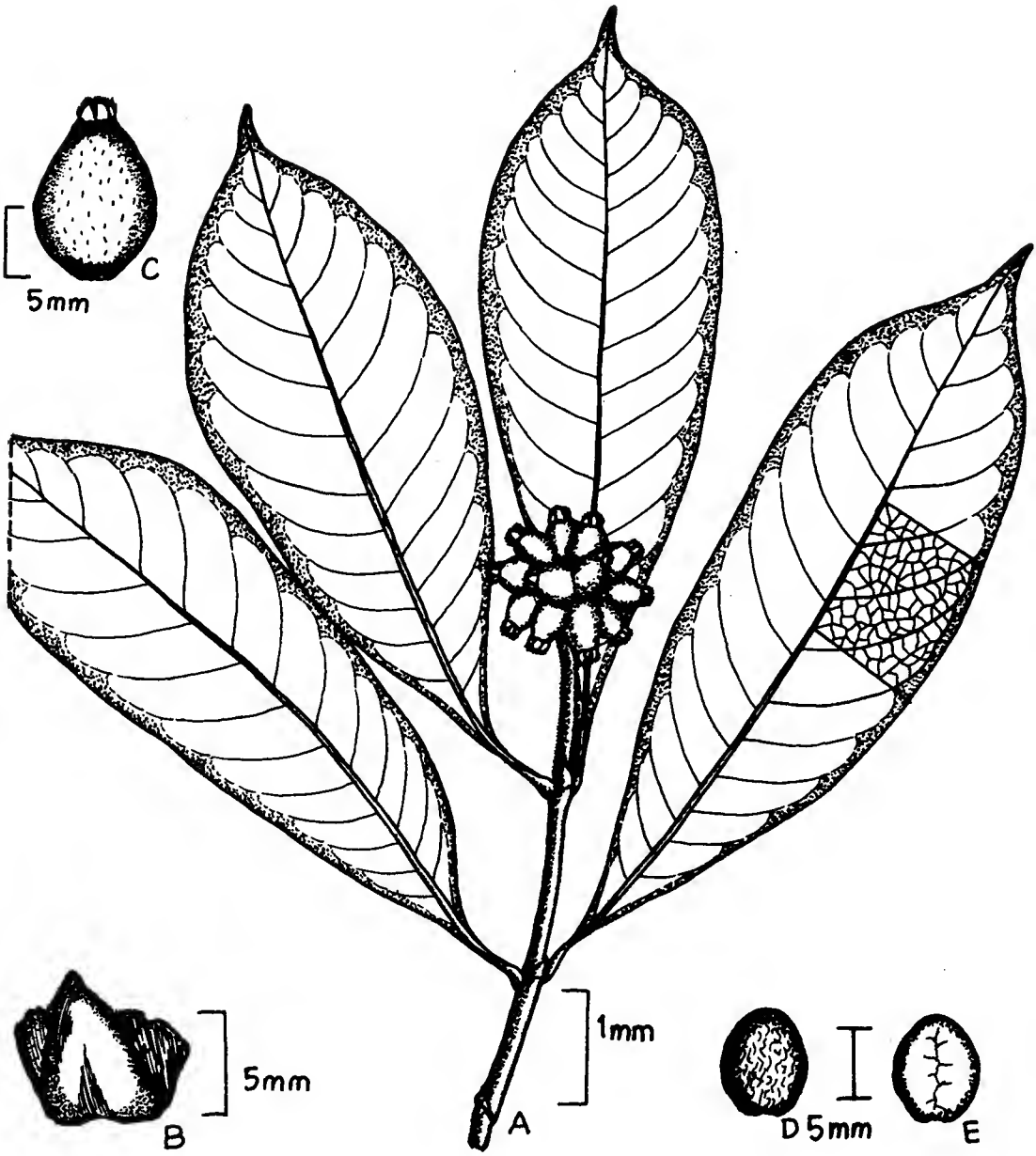

Fig. 3. *Psychotria globicephala* Gamble: A. Fruiting twig; B. Stipule; C. Fruit; D. Seed – dorsal view; E. Seed – ventral view.

oblong, c. 0.55 x 0.2 mm, dorsally convex. Ovary c. 0.5 mm long; style 4.8-5.1 x 0.13-0.29 mm, slender, glabrous; stigma 2-lobed, papillose; lobes ovate, each c. 0.6 x 0.4 mm, obtuse at apex; disc subglobose or flattened, glabrous. Fruits green, ellipsoid-ovoid, 10-12 x 6-8 mm, sessile, in clusters, ferrugineus pubescent; seeds 2, pink, ellipsoid, plano-convex, 6.5-7.5 x 4.7-6 mm, truncate at base, obtuse at apex.

Flowering and fruiting: September - February.

Distribution: Tirunelveli District of Tamil Nadu in India.

Specimens examined: India, Tamil Nadu, Tirunelveli Dist.: Courtallum, Herb. R. Wight Prop. Presented 1871, *Acc. No. 26184* (MH); Kalakkad-Mundanthurai Tiger Reserve: Thalamalai, ± 450 m; 7 Jan. 2000, *Viswanathan & Manikandan 5311*; *ibid.*, 15 Feb. 2000, *Viswanathan & Manikandan 5501*; Valaiyar, ± 1000 m, 16 Nov. 2000, *Viswanathan & Manikandan 7151 & 7155* (SPKCES).

Habitat: This species can be rarely seen in the southern tropical wet evergreen forests.

Notes: This species is reported to be one of the 224 species presumably in danger of extinction in South India by Henry *et al.* (1978). Nayar and Sastry (1988) designated this species as endangered based on the absence of any collections after the type. The low population density and narrow range of distribution make this species critically endangered.

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